

(3 Hours)

[Total Marks: 100

- N.B.:** (1) Question No.1 is compulsory.
 (2) Attempt any four questions out of remaining six.
 (3) Figures on the right indicate full marks.
 (4) Draw diagrams / sketches wherever necessary.
 (5) Use legible handwriting. Use blue / black ink only.

1. (a) Draw and explain two different types of pressure sensing element. [05]
 - (b) Differentiate between active and passive transducer. [05]
 - (c) What is motion artifact and how it is minimized? [05]
 - (d) Explain the working of photoconductive cell. [05]
- Q.2. (a) Draw temperature versus resistance characteristics for PTC and NTC thermistor. Which are the different methods of thermistor linearization? Explain with circuit diagram and necessary equation. [12]
- (b) Explain with a neat diagram any one application of piezoelectric Transducer. [08]
- Q.3. (a) Explain with a neat block diagram generalized instrumentation system. [10]
- (b) Explain the term biosensors and immunosensors. Explain with a neat diagram working of any one immunosensor. [10]
4. (a) Explain the use of fibre optics for measurement of any one medical parameter. (10)
- (b) Explain transcutaneous measurement of Arterial Oxygen tension. [10]
- Q.5. (a) Explain construction and working of L.V.D.T. [10]
- (b) What is meant by Gauge Factor. Derive the formula. [10]
- Q.6. (a) Explain the application of unbounded gauge for measurement of blood pressure. [10]
- (b) Explain any four static characteristics giving suitable examples. [10]
- Q.7. Write short notes on: [20]
- (a) Radiation Sensor
 - (b) Electrode.- Electrolyte interface
 - (c) Affinity sensors
 - (d) Microelectrodes.